

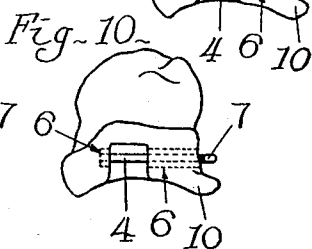
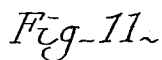
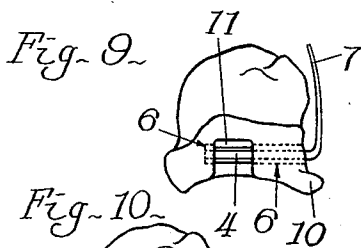
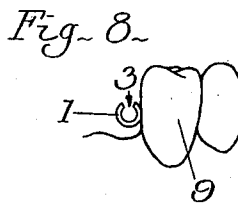
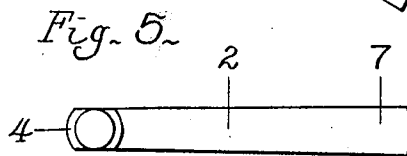
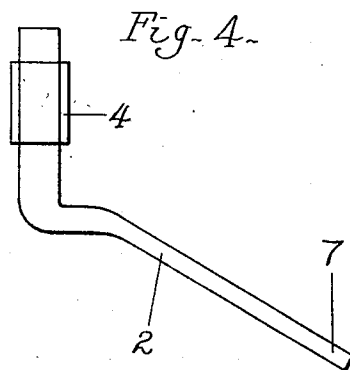
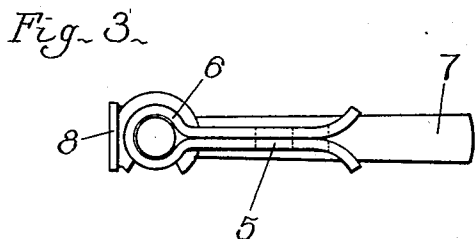
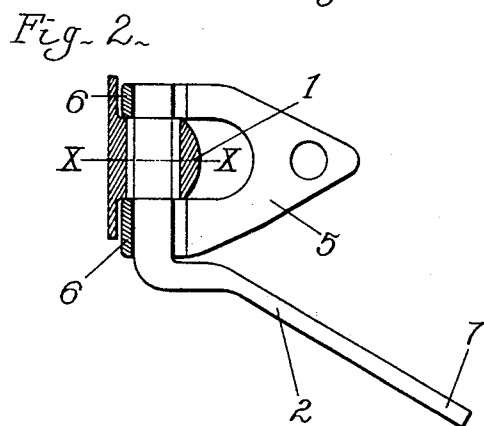
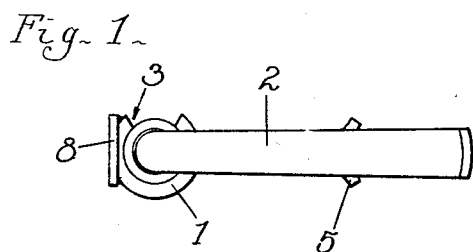
June 12, 1928.

K. INOUE

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ATTACHMENT METAL FITTING FOR DETACHABLE BRIDGE DENTURES

Filed July 7, 1926



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UNITED STATES PATENT OFFICE.

KOJIRO INOUE, OF TOKYO, JAPAN.

ATTACHMENT METAL FITTING FOR DETACHABLE BRIDGE DENTURES.

Application filed July 7, 1926, Serial No. 120,904, and in Japan May 11, 1926.

This invention relates to attachment metal fittings for detachable bridge denture, consisting of a gapped ring to be fixed to an abutment tooth and an angled stem to be attached to a detachable bridge denture. The angled stem is provided near its one end with a projection which has flat surfaces on two opposite sides to allow it to pass through the gap, and which has peripheral surfaces on the other two opposite sides to cause it to be fitted, when revolved, into the inner surface of the ring. On the angled stem, two bands having a common strut, are pivoted with the projection between them, which bands and projection are to be fixed in the gutta percha base of a detachable bridge denture.

The object of this invention is to simplify and facilitate the working on an abutment tooth and the manufacturing of a detachable bridge denture; to ensure the attachment of the said bridge denture so as to perfectly prevent the abutment tooth from being detached by sticky food; and in case of a detachable bridge denture having an abutment tooth on one side, to moderate the stress on the abutment tooth caused by mastication.

Referring to the accompanying drawings,

Fig. 1 is a front elevation of my invention in which the projection of the angled stem is inserted in the gapped ring,

Fig. 2, the plan of the above,

Fig. 3, the back elevation of same,

Fig. 4, the plan of the angled stem,

Fig. 5, the elevation of the above,

Fig. 6, the sectional view on line X—X of Fig. 2,

Fig. 7, the sectional view of my invention in which the angled stem is put in such a position as to be taken out of the ring through the gap,

Fig. 8, the elevation of an abutment tooth with a gapped ring attached thereto,

Fig. 9, the elevation of the detachable bridge denture with the angled stem fixed thereto and the projection placed in such a position as to be able to pass through the ring-gap,

Fig. 10, the elevation of the detachable bridge denture, the projection of the angled stem being fitted to the inner surface of the gapped ring,

Fig. 11, a detachable bridge denture having an abutment tooth on one side only.

As shown in the accompanying drawings, my invention consists of a gapped-ring (1) and an angled stem (2). The angled stem

(2) is provided near its one end with a projection (4) having flat surfaces on opposite sides to let it pass through the ring-gap (3), and peripheral surfaces on the other two opposite sides to fit it in the inner surface of the gapped ring (1). On the angled stem (2), two bands (6), (6) having a common strut (5) are pivoted with the projection (4) between them.

The projection (4), when revolved by the external arm (7) of the angled stem (2), is inserted into or taken out of the gapped ring (1). The gapped ring (1), as shown in Fig. 8 is fixed directly or by means of a washer (8), to the abutment tooth (9). The angled stem, as in Figs. 9 and 10, fixed to the detachable bridge denture by fixing the strut (5) and the bands (6), (6) in the body of the gutta percha base (10) of the bridge denture, the projection (4) being situated in the cavity (11) of the gutta percha base (10). When the external arm (7) of the angled stem (2) is lifted and the bridge denture (10) is pressed against the abutment tooth (9), the projection (4) will pass through the gap (3) into the ring (1). Then, when the external arm (7) is laid down, the projection (4) will be revolved and fitted in the inner surface of the gapped ring (1) and at the same time the external arm (7) hold the abutment tooth (9) fast and ensure the attachment of the detachable bridge denture. The attachment does not slacken, unless the external arm (7) be lifted up intentionally. The detachable bridge denture, however, may be taken off the abutment tooth simply by lifting the external arm (7) with fingers and picking it up.

The superiority of detachable bridge dentures over the partial denture with base and the fixed bridge denture is generally known, but the complexity and difficulty in manufacturing it and the devitalization in many cases of abutment teeth are also known as the chief defects of detachable bridge works. For instance, the detachable bridge work ends in failure on account of a trifling mistake made in design or working as to the mutual relation between the attachment arrangements on both sides of a detachable bridge denture; and, on account of necessity of making parallel the confronting surfaces on the bridge denture and the abutment tooth or the confronting surfaces on abutment teeth, those abutment teeth are often devitalized. In my invention, however, the

ring-gap (3), through which the projection (4) on the angled stem passes, may be made comparatively larger without decreasing the firmness of attachment of the detachable bridge denture, the attachment being made by revolving the projection (4), thereby to fit it in the inner surface of the gapped ring (1). Again, as the gapped ring (1) has a short center line and the ring-gap (3) may be made comparatively larger as above described, the accuracy of the inner surface in the gapped ring (1) and the peripheral surfaces on the projection (4) is enough for the firmness of attachment, but accuracy in design and working is not necessary as is in detachable bridge works hitherto known. Moreover, the confronting surfaces on the detachable bridge denture and the abutment teeth need not be made parallel, and therefore the troubles hitherto caused by complexity and difficulty in the manufacture of detachable bridge dentures and the de-
 20 vitalization of abutment teeth have been removed.

25 The angled stem (2) is inserted from outside in the detachable bridge denture and the strut (5) and the bands (6), (6) are fixed in the body of the gutta percha base (10) of the detachable bridge denture, thus giving stability to the angled stem (2). The bands (6), (6) fill up the gap between the angled stem (2) and the body of the gutta percha base (10), which not only gives stability to the angled stem (2), but also prevents the gutta percha base (10) from wearing out by the friction caused by the revolution of the angled stem (2).

If the metal fittings of my invention are used for a detachable bridge denture which has an abutment tooth on one side only, the detachable bridge denture, in mastication, presses the elastic alveolar membrane with the angled stem as an axis, and makes an oscillatory motion, so that the stress caused by mastication acts mainly upon the alveolar membrane and the stress upon the abutment

tooth is considerably moderated, in consequence of which the damaging of the abutment tooth is greatly reduced. The reduction of stress upon the abutment tooth will be secured most effectively, by fixing the gapped ring (1) to the abutment tooth in contact with the gum, and fixing the angled stem to the detachable bridge denture in the proper situation as shown in Fig. 11.

Having now particularly described my said invention, what I claim to be protected by Letters Patent is:—

1. A fitting for a detachable bridge denture, consisting of a gapped ring to be fixed to an abutment tooth, and a rotary stem fitted to the detachable bridge denture, said rotary stem being provided near one end with a projection having a flat surface on one side so as to allow it to pass through the gap in said ring, and peripheral surfaces on the other sides to cause said projection, when rotated, to fit against the inner surface of the gapped ring, and two bands having a common strut fixed to the base of said denture, said stem being pivoted to the bands with the projection therebetween.

2. A fitting for a detachable bridge denture, comprising a gapped ring adapted to be fixed to an abutment tooth, and a rotary stem adapted to be fitted to the denture, said rotary stem being provided near one end with a projection having flat surfaces on two opposite sides so as to allow it to pass through the gap in said ring, and peripheral surfaces on the other two opposite sides to cause the projection, when rotated, to fit against the inner surface of the gapped ring, and two bands having a common strut interconnecting them and adapted to be fixed in the base of said denture, said rotary stem being pivoted in said bands and thereby placing said projection between said bands.

In testimony whereof I affix my signature.

KOJIRO INOUE.